

<b>CSM – 7/18</b>
<b>Agriculture</b>
<b>Paper – II</b>

*Time : 3 hours*

*Full Marks : 300*

*The figures in the right-hand margin indicate marks.*

*Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and three of the remaining questions, selecting at least one from each Section.*

**SECTION – A**

1. Answer any three of the following in about 200 words each : 20×3 = 60

- (a) Discuss the importance of Law of heredity in plant breeding. Explain what is meant by recombination breeding . Discuss the importance of chromosomal aberrations and linkage and crossing-over in recombination breeding techniques.

(b) Write notes on any four of the following :

- (i) Hybrid vigour and its importance in crop improvement
- (ii) Cytoplasmic Inheritance
- (iii) Importance of Selfing and Crossing techniques
- (iv) Pureline and pedigree selections
- (v) Importance of Interspecific and Intergeneric hybridization

(c) Explain, with suitable examples, how the biotechnology can profitably be applied in agriculture and narrate the success stories in agricultural and horticultural crops.

(d) What is meant by heterosis ? How this technique can be made profitable in Agriculture ? Give a brief account on the limitations and importance of heterosis in crop improvement. How this technique can be improved further ?

2. Distinguish between Nuclear seed and Breeder seed. Does the seed viability help in crop production ? Narrate the different seed processing techniques and their importance in Agriculture and Horticulture. 60

3. (a) Distinguish between the following :

20×3 = 60

(i) Plant Growth Regulators and Plant Growth Retardants

(ii) Life Span and Seed Viability

(iii) Sterility and Incompatibility

(iv) Photoperiods and Nyctoperiods

(b) What are the main role of chlorophyll and carotenoids in crop plants ? Explain with examples. List out the major types of enzymes bio-synthesized in crops and their importance in crop production.

(c) Give a brief account on the types of vernalization and its significance in agriculture and horticulture with suitable examples.

4. Answer any three of the following :  $20 \times 3 = 60$

(a) In an ideal atmospheric condition, the two crops viz., Sorghum and Groundnut are cultivated and will there be any difference in carbon assimilation efficiency between them ? Justify your answer with suitable evidences.

(b) Narrate the significant role of plant growth regulators in Agricultural and Horticultural crops with specific examples.

(c) What is the major component of sesamum seed and how it is synthesised ? Explain with suitable examples and sketches.

- (d) Does photorespiration advantageous in crop production. Narrate the types of respiration processes and their importance in crop production. Discuss the interrelationships between Respiration and Photosynthesis in crops.

### SECTION - B

5. Answer any three of the following :  $20 \times 3 = 60$

- (a) What do you mean by global warming ? Discuss the impact of climate change in agriculture. Narrate the strategies to be adopted for mitigating the climatic effects in crop production.
- (b) Give a brief account on the methods of preservation of temperate fruits and vegetables. Narrate how they are processed and explain their significance.
- (c) What do you mean by land scaping and how would you design lawn and/or garden for a domestic and public utilities ?

(d) Narrate the various techniques of High-tech horticulture and the crops suitable and their economic importance.

6. (a) Mode of action of contact and systemic pesticides with suitable examples. 20

(b) Give a brief account on the various diseases and pests of temperate vegetables, tropical fruit crops and their management. 20

(c) How would you forecast pests and diseases incidence of crops? Give a brief account on the significance of biological control of pests and diseases in agricultural crops with suitable examples. 20

7. Discuss the storage pests and diseases occur in pulses with examples and their control. Briefly explain about the commercial importance of bee keeping. 60

8. (a) Explain the food production and its consumption pattern in national dietary and its impact in alleviating the malnutrition. 20
- (b) Constraints in food production and procurement. 20
- (c) Microbial toxins. 20



